Printed Pages : 1 Roll No. | | | | | | | | | | | EEC035

B.TECH.

THEORY EXAMINATION (SEM–VIII) 2016-17

INTRODUCTION TO RADAR SYSTEM

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Explain the following: **10 x 2 = 20**

(a) What do you mean by maximum unambiguous range?

(b) What are the applications of radar?

(c) What is called a missed detection?

(d) Define MTI improvement factor?

(e) What is stalo and coho?

(f) What is Doppler Effect and how it is useful in long distance communication?

(g) Write the advantage of Digital MTI radar over analog MTI radar?

(h) Define blind speed?

(i) What are the various types of radar tracking system?

(j) What are the limitations that affect the accuracy of tracking radar?

SECTION – B

2. Attempt any five parts of the following questions: **5 x 10 = 50**

(a) Derive the Range equation for target detection by the Radar

(b) Explain the concept of radar cross-section of targets

(c) Draw the block diagram and explain the operation of CW radar using zero intermediate frequency in the receiver?

(d) Explain digital MTI Doppler signal processor?

(e) Explain Conical Scan and its merits over lobe switching?

(f) What is ambiguity function ? Discuss the ambiguity function of a simple pulse.?

(g) Write short note on accuracy of Radar measurement?

(h) Derive an expression for probability of false alarm?

SECTION – C

Attempt any two parts of the following questions: **2 x 15 = 30**

3 Describe the various types of delay lines used in MTI radar. Explain the frequency response.

4 What do you mean by coherent, non-coherent and binary integration? Discuss non-coherent integration of nonfluctuating targets ?

5 (i) Show that the maximum range of Radar operating at a given frequency is proportional to the linear dimension of the antenna?

(ii) Describe the various antenna parameters?